

<<Caught by disorder无序>>

图书基本信息

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内容概要

The study of disorder has generated enormous research activity in mathematics and physics. Over the past 15 years various aspects of the subject have changed a number of paradigms and have inspired the discovery of deep mathematical techniques to deal with complex problems arising from the effects of disorder. One important effect is a phenomenon called localization, which describes the very strange behavior of waves in random media---the fact that waves, instead of traveling through space as they do in ordered environments, stay in a confined region (caught by disorder). To date, there is no treatment of this subject in monograph or textbook form. This book fills that gap. Caught by Disorder presents: * an introduction to disorder that can be grasped by graduate students in a hands-on way * a concise, mathematically rigorous examination of some particular models of disordered systems * a detailed application of the localization phenomenon, worked out in two typical model classes that keep the technicalities at a reasonable level * a thorough examination of new mathematical machinery, in particular, the method of multiscale analysis * a number of key unsolved problems * an appendix containing the prerequisites of operator theory, as well as other proofs * examples, illustrations, comprehensive bibliography, author and keyword index Mathematical background for this book requires only a knowledge of partial differential equations, functional analysis---mainly operator theory and spectral theory---and elementary probability theory. The work is an excellent text for a graduate course or seminar in mathematical physics or serves as a standard reference for specialists.

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